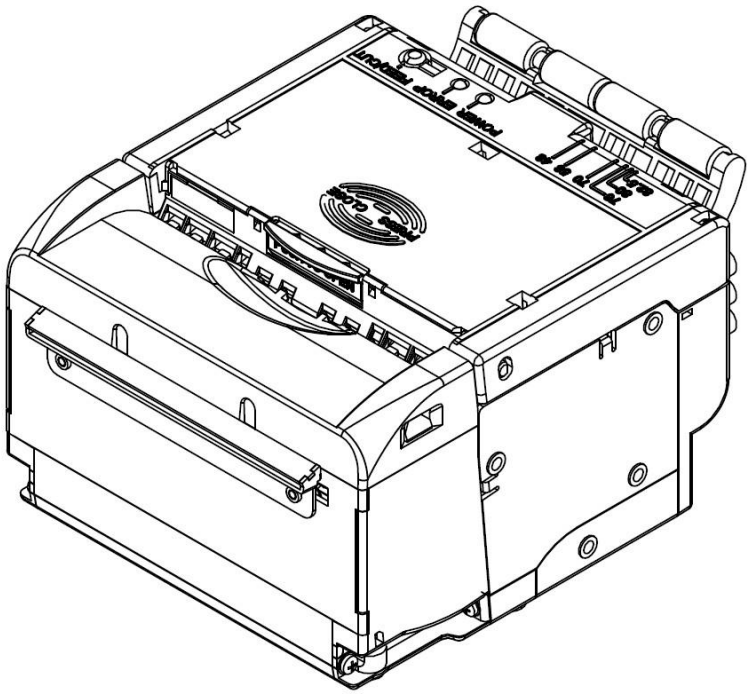
USER'S MANUAL

Embedded Thermal Printer

BK-C310



Shandong New Beiyang Information Technology Co., Ltd.

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Version 1.0

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Warning and caution

Warning: Items shall be strictly followed to avoid injury or damage to body and equipment.

Caution: Items with important information and prompts for operating the printer.

Caution: Thermal elements. No touching.

Warning: Do not touch equipment to avoid damaging it for static electricity.

SNBC has passed the following certifications:

ISO9001 Quality Control System Certification

ISO14001 Environmental Management System Certification

OHSAS18001 Occupational Health and Safety Management System Certification

IECQ QC 080000 Hazardous Substance Process Management System Certification

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The product has passed the following safety certifications:

Safety instructions

Before installing and using the printer, please read the following items carefully:

1) Install the printer on a flat and stable surface;
2) Reserve adequate space around the printer so that convenient operation and maintenance can be performed;
3) Keep the printer far away from water source, and do not expose the printer to direct sunlight, strong light and heat;
4) Do not use or store the printer in a place exposed to high temperature, high humidity or serious pollution;
5) Do not place the printer in a place exposed to vibration or impact;
6) No condensation is allowed to the printer. In case of such condensation, do not turn on the power until it has completely gone away;
7) Connect the printer power to an appropriate grounding outlet. Avoid sharing one electrical outlet with large power motors or other devices that may cause the fluctuation of voltage;
8) Disconnect the power when the printer is deemed to idle for a long time;
9) Don't spill water or other electric materials into the printer (e.g. metal). In case this happens, turn off the power immediately;
10) Do not allow the printer to start printing when there is no recording paper installed; otherwise the print head and platen roller will be damaged;
11) To ensure quality print and normal lifetime, use recommended paper or its equivalent;
12) Shut down the printer when connecting or disconnecting interfaces to avoid damages to control board;
13) Set the print darkness to a lower grade as long as the print quality is acceptable. This will help to keep the print head durable;
14) Do not disassemble the printer without permission of a technician, even for repairing purpose;
15) Keep this manual safe and at hand for reference purpose.

Revision History

Date	Version	Description	Author
2015-1-22	V1.0	Initial version.	Mr.Wang Qingfeng Mr.Yu Yan Mr. Feng Ning Mr. Xu Shanhua

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1 Summary

1.1 Brief introduction

BK-C310printer is a high performance thermal printer equipped with cutter and presenter, it can accept up to 300mm paper roll and the widest print width is 80mm. It can be widely used in various fields like finance, retail, lottery, etc.

BK-C310 consists of the following modules:

- Thermal printing unit
- Presenter
- Paper holder
- Control board
- Cutter

BK-C310 can be connected with other device by USB interface or serial interface. Drivers for Windows 2000/XP/2003/Vista/2008/Win7/Win8/Win8.1, Windows XP Embedded operating systems and the software development kit based on DLL are available, as well as the CUPS drivers for Linux system.

1.2 Main features

- Printing
  - High-speed
  - Low-noise thermal printing
  - High reliability
- Presenter
  - Paper holding
  - Paper retraction
  - Paper ejection

  Note: The Presenter is a paper accommodation mechanism and locates at the front end of the printer;
- Special functions
  - Anti-jam
  - Anti-pull
  - Detect the last ticket
- Applications
  - Command set is compatible with ESC/POS standard;
  - Characters handling: zoom 1 to 6 times horizontally or vertically, rotation print (0°, 90°, 180°, 270°), bold, black/white reverse, underline, upside-down print;
  - Barcode print: print barcode by commands in horizon and vertical direction;
  - Character size (Font A or Font B) can be set by commands;
  - Can repeat printing by macro definition.
- Printer maintenance

- Replace paper roll easily;
- The top cover of printer can be opened, which is convenient for maintenance;
- The top cover of Presenter module can be opened, which is convenient for maintenance;
- Characteristics and parameters can be set by software;
- Single USB interface or single serial interface is optional;
- Mark identification and checkout;
- Lower mark sensor for non-thermal side is adjustable;
- Semi-auto paper loading;
- Firmware can be updated on-line.

2 Main technical index

2.1 Technical specification

Items		Parameter
		203DPI model
Printing	Print method	Direct thermal line
	Resolution	203×203DPI
	Paper width	48~82.5mm
	Print width	Maximum:80mm(3.2 "); default: 80mm
		Maximum: 640 dots
	Ticket length	70mm-350mm
	Print speed	130mm/s (Max.)
	RAM memory	8MB SDRAM
	Flash memory	2/4MB
	Print head temperature detection	Thermal resistor
	Print head position detection	Micro switch
	Paper /Mark detection	Photoelectric Sensor
	Paper near end detection	Photoelectric Sensor
	Communication interface	USB2.0
Barcode Fonts Graphics	Barcode	1-D barcode: UPC-A, UPC-E,JAN8 (EAN8), JAN13 (EAN13), CODE 39, CODE 93, CODE 128, ITF, CODABAR 2-D barcode: PDF417,QR,Maxicode,2D GS1
	Fonts	Standard ASCII, compressed ASCII Optional Asian character set(Simplified Chinese, traditional Chinese, Japanese, Korea)
	Fonts Process	All fonts can be enlarged 1 to 6 times vertically and horizontally respectively, Rotation Print (0°, 90°, 180°, 270°),Bold, white/black reverse, underline, upside-down
	Graphics	Support bitmap to be downloaded to RAM and FLASH Support direct bitmap print
Media	Paper type	Continuous paper/marked paper
	Paper roll OD	250mm
	Paper roll ID	25.4mm
	Thickness	0.05mm-0.1mm
	Thermal layer	Outward/Inward
Power consumption	24VDC input / room temperature / rated current	2.5A(standard test environment ,12.5% duty ratio)
PRESENTER	Presenter paper output detection	Mechanical photoelectric sensor
	Presenter paper output speed	150mm/s
	Presenter paper pull detection	No
	Presenter paper jam detection	Photoelectric sensor
	Presenter paper retraction detection	No
	Presenter paper retraction speed	150mm/s
	Presenter paper output mode	Paper holding/Paper retraction/Paper ejection/Order control/Close (optional)
Reliability	Print head lifetime	150KM (recommend paper，standard test environment，12.5% duty ratio)

Items		Parameter
		203DPI model
	Cutter lifetime	1 million cuts (recommend paper，standard test environment)
	MTBF of main control board	360,000 hours
	MCBF	7000000 lines
Environment	Operation environment	Operation environment（no power）：0～50℃，20～90%RH（40℃） Operation environment（include power）：0～45℃，20～90%RH（40℃）
	Storage environment	Temperature:-25°C ～60°C Humidity: 15%～ 98% RH(40°C)
Physics Character	Overall size	116(W) x 146.8(L) x 76.7(H)mm(mechanism module, excluding paper holder)
	Weight	1.5kg

Table 2.1 Technical specification

Caution:

- ✧ DPI: dots printed for each inch. (One inch is about 25.4mm)
- ✧ The real print speed is related with data transmission speed, speed darkness, print duty, control commands and input voltage, which may be lower than that in above table.
- ✧ PRESENTER is a mechanism accommodating paper, and locates at the front of the printer.
- ✧ The relationship between the working status of print unit and the environment is shown in the figure:

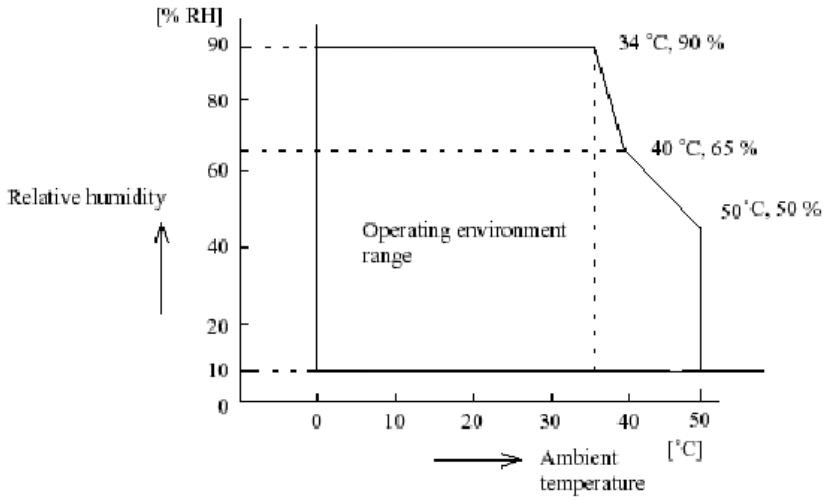


Fig. 2.1-1 Relationship between working status of print unit and environment

2.2 Paper Specification

- Paper type: Continuous /marked paper
- Paper supply method: Paper roll
- Paper width: 48-82.5mm
- Paper weight: 45g～100g
- Thermal layer: Outward/Inward
- Paper roll specification:

  Optional ID of paper roll core: ф10, ф18, ф25, ф40mm

  Minimum ID of paper roll: ф16, ф24, ф31, ф46mm

  Maximum OD of paper roll: ф300mm

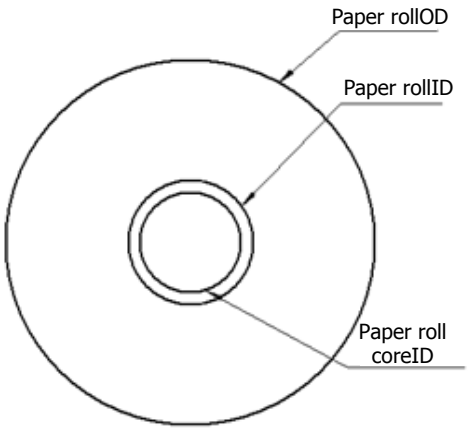


Fig. 2.2-1 Paper roll diagram

Note: The supported paper thickness and paper roll diameter is as followings when there is Presenter module:

Paper thickness	Minimum paper roll ID	Remarks
45-80 um	Φ16	Outward paper
80-100 um	Φ31	
45-100 um	Φ16	Inward paper

- Recommended paper
  - Recommended continuous paper:

Paper type	Manufacturer
FD200	OJI Paper CO., LTD.
FD210	OJI Paper CO., LTD.
ADP78	OJI Paper CO., LTD.
PD150R	OJI Paper CO., LTD.

Table 2.2-1 Recommended paper

➢ Recommended marked paper:

The marked paper should meet the following requirement besides that of standard paper:

✧ Mark position

There are three positions for mounting the mark sensor on the thermal side, and the left and the right positions can be adjusted along with the paper guide block while the middle position is fixed. The position for mounting the mark sensor on the non-thermal side is continuously adjustable. The above mark sensor has requirements for the mark position, referring to the Fig. 2.2-2;

✧ In using marks, it is recommended to use the following parameter:

L1 mark width: 8mm≤L1≤paper width

L2 mark width:: 4mm≤L2≤8mm

✧ The reflectivity of marks is less than 15%; The reflectivity of other part of the ticket within mark width along paper feed direction is over 75%.There should not be any characters, graphics as advertisement between marks space

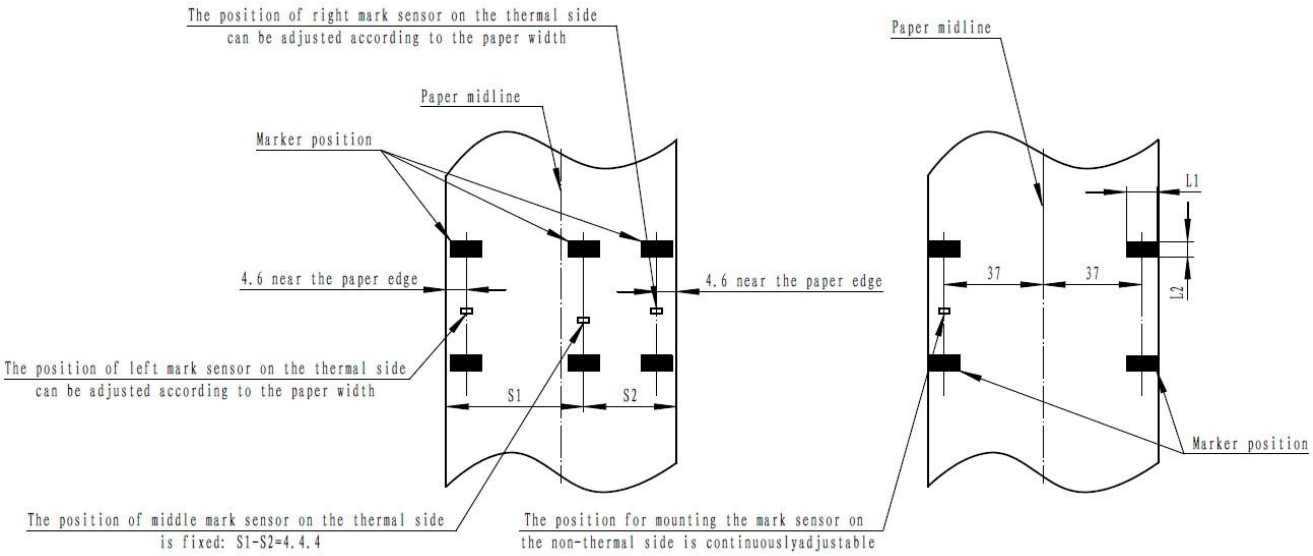

The position of right mark sensor on the thermal side
can be adjusted according to the paper width
Paper midline
Marker position
4.6 near the paper edge
4.6 near the paper edge
The position of left mark sensor on the thermal side
can be adjusted according to the paper width
S1
S2
The position of middle mark sensor on the thermal side
is fixed: S1-S2=4.4.4
Paper midline
L1
37
37
L2
Marker position
The position for mounting the mark sensor on
the non-thermal side is continuouslyadjustable

Fig. 2.2-2 Mark position diagram

Caution:

✧ Due to the dithering during paper feeding and tolerance of paper parameters, the mark positioning position may have a tolerance of ± 1mm.

✧ Only one mark sensor is mounted on the non-thermal side when the printer is delivered from the factory (default position is on the non-thermal side of paper path) and the mark sensor position is continuously adjustable.

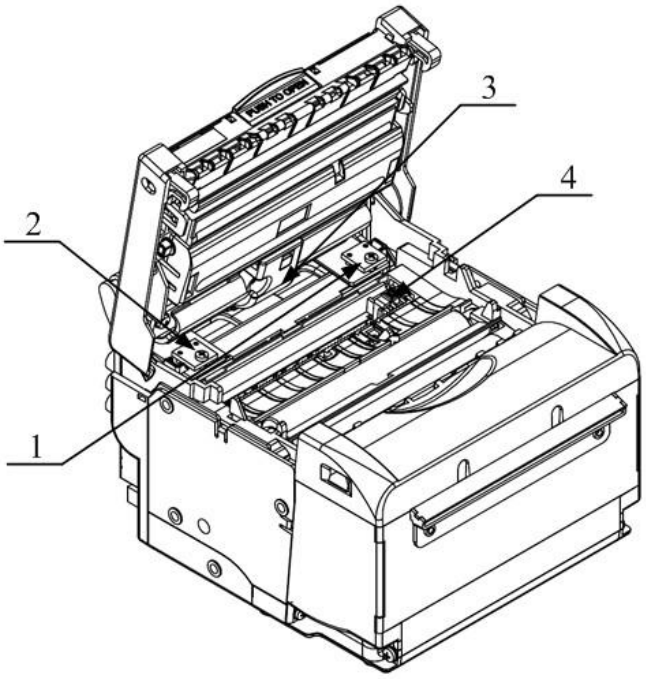


Fig. 2.2-3 Mark sensor

1- Right mark sensor on the thermal side
2- Left mark sensor on the thermal side
3- Middle mark sensor on the thermal side
4- Mark sensor on the non-thermal side

Caution:

- ✧ The mark sensor on non-thermal side is the default sensor when delivery from the factory, and the middle mark sensor on thermal side is used as paper feeding sensor;
- ✧ The middle mark sensor on thermal side is optional, while only one of the other three sensors can be installed.

Caution:

- ✧ Please use the recommended paper or its equivalents. Using other types of paper may affect print quality and reduce the print head lifetime;
- ✧ Do not paste the paper to the shaft core;
- ✧ If the paper comes in contact with chemical or oil, it may discolor or be less heat sensitive, which will greatly affect the print quality;
- ✧ Do not rub the paper surface with a nail or hard metal. Otherwise it may discolor;
- ✧ When the temperature goes up to 70℃, paper will discolor. So please be careful to the effect of temperature, humidity and sunlight in environment.

3 Structure and functions

3.1 Appearance

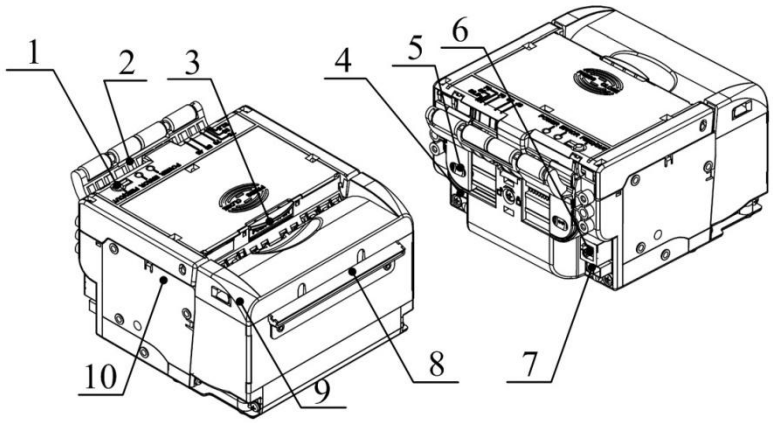


Fig. 3.1-1 BK-C310 printer appearance

1 —Button

2 —Buffer module (optional)

3 — Button for opening and closing the top cover

4 —Paper near sensor socket

5 —Paper guide block

6 —Communication interface (USB or serial interface is optional)

7 —Power interface

8—Paper exit

9—Presenter

10 —Print module

3.2 External dimension

Overall size of the printer

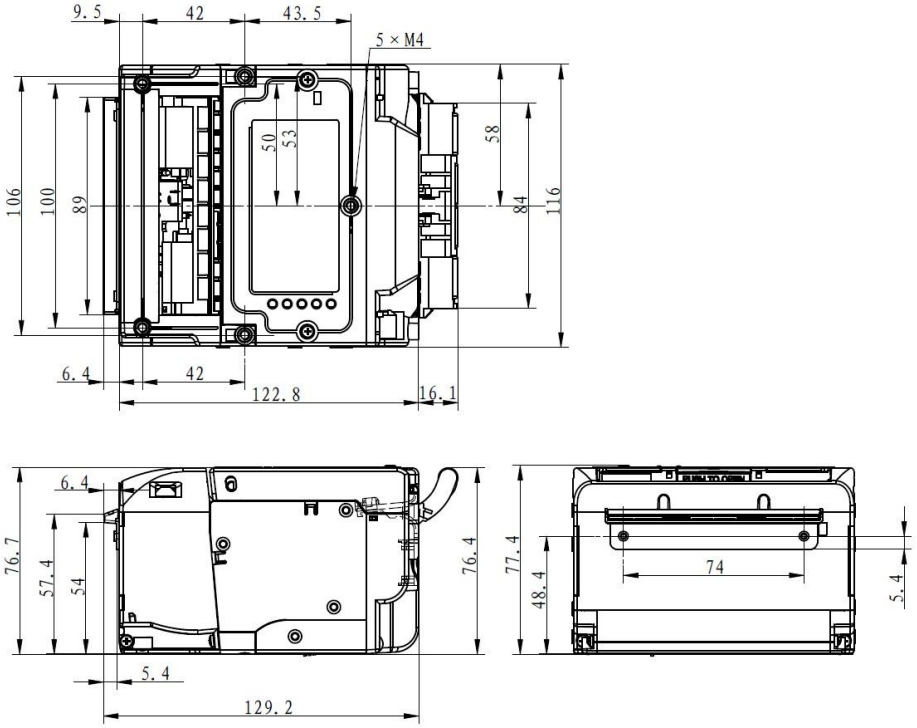


Fig. 3.2-1 Overall size of printer with buffer

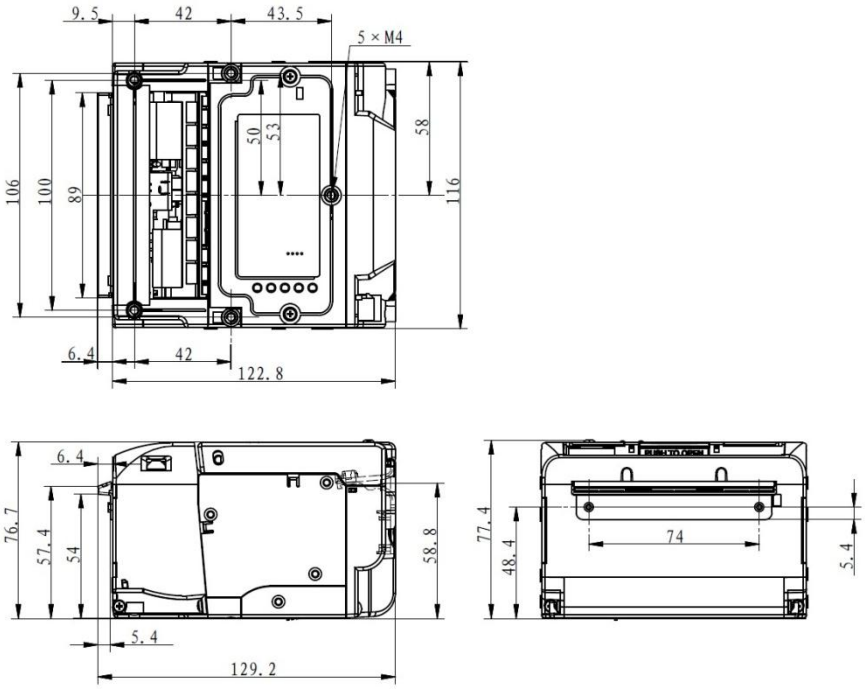


Fig. 3.2-2 Overall size of printer without buffer

3.3 Print unit and controlling parts

The controlling parts include circuit board and corresponding adjustment buttons and interfaces.

3.3.1 Exterior of print unit and controlling parts

The print unit consists of print mechanism and cut mechanism, referring to the fig.3.3-1:

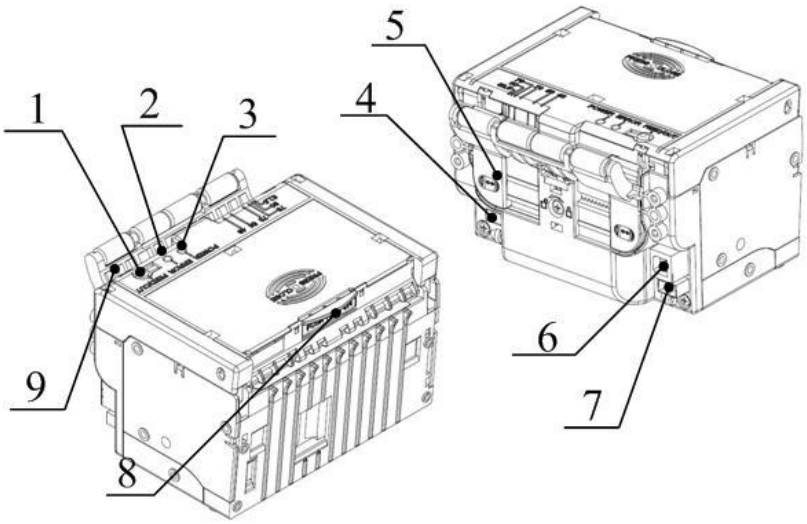


Fig.3.3-1 Print unit and controlling parts

1 —Feed/Cut button 2 —Error LED
3 —Power LED 4 —Paper near sensor socket
5 —Paper guide block 6 —Communication interface (USB or serial interface is optional)
7 —Power interface 8—Button for opening and closing the top cover
9—Paper entry

Note: The power cord connected with power interface 7 has power.

3.3.2 Modules of print unit

- **Feed/Cut button**
  - Print self-test page: keep pressing the FEED button while turning on the power for 1s, the printer will print the self-test page;
  - Feed paper: under normal conditions, press the FEED / CUT button, the printer will feed paper, and the printer will stop feeding paper when release the FEED / CUT button. During paper feeding, the Presenter will start when the paper head enters the Presenter, and the Presenter will stop running when the paper head is held by the Presenter;
  - Cut paper: the printer will cut paper if press the FEED / CUT button for two times continuously.

Caution:

✧ The printer will not run when press the FEED button under error status.

- **Button for opening and closing the top cover**

  After pressing the button for opening and closing the top cover, the top cover module can be opened for maintenance work, such as clear jammed paper jam, clean the print head/platen rollers.

- **Power switch**

  Press "O" to turn off the power, or press "—"to turn on the power.

- **Error LED (Red)**

  Indicate different status of printer. Normally, it is off; under error status (like paper end), it will flash.

  Note: Error LED also flashes when the printer executes macro definition.

- **Power LED (Green)**

  Indicate whether the power is on or not and it is always on when the printer is turned on.

Heating:

✧ The print head and the motor gives out heat while using, please do not touch it just after operation.

3.4 Presenter

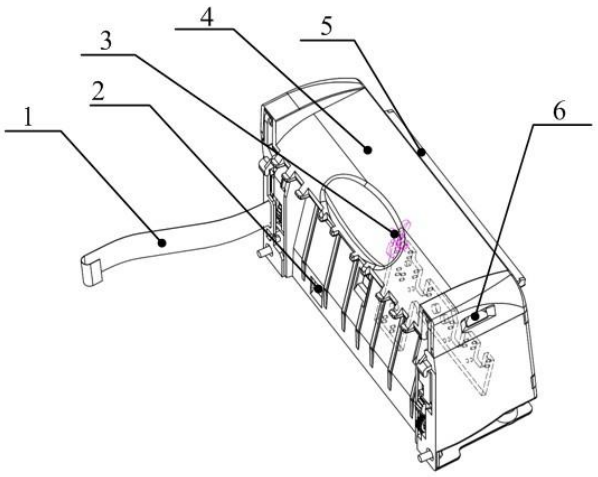


Fig. 3.4-1 Appearance of Presenter

1- Presenter FFC cable

2- Paper retraction sensor: Check whether the paper is retracted correctly during the process of paper retraction.

3- Paper out sensor: Detect the status of print paper and confirm whether the print paper has been taken away or not.

4- Presenter top cover: After pressing the snap-fit, the cover can be opened for clearing Presenter jammed paper.

5- Paper outlet mouth.

6- Snap-fit for fixing the top cover.

4 Installation and suggestion

4.1 Unpacking

Open the carton and check whether all items listed on the packing list are included or have any damages. In case of damages or missing items, please contact your dealer or the manufacture for assistance.

4.2 Adjust the paper guide block

After unpacking the package, adjust the paper guide block to adapt to the corresponding paper width before installing the printer.

BK-C310 can use paper of 48-82.5mm width. Adjust the paper guide block to the corresponding scale as shown in the following figure. There are six scales: 82.5,80,76,70,56 and 48mm. Move the paper guide block until its gap aligns with the round dot of target scale.

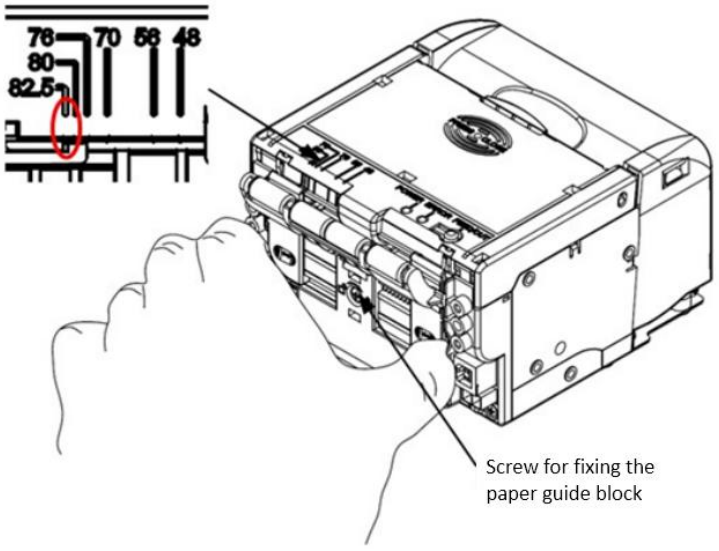


Fig. 4.2-1 Paper guide block adjustment diagram

Caution:

✧ Refer to the following figure, release the screw fixing the paper guide block in counterclockwise direction (do not need to remove the screw completely) before adjusting it, and then tighten the screw after moving the paper guide block in place.

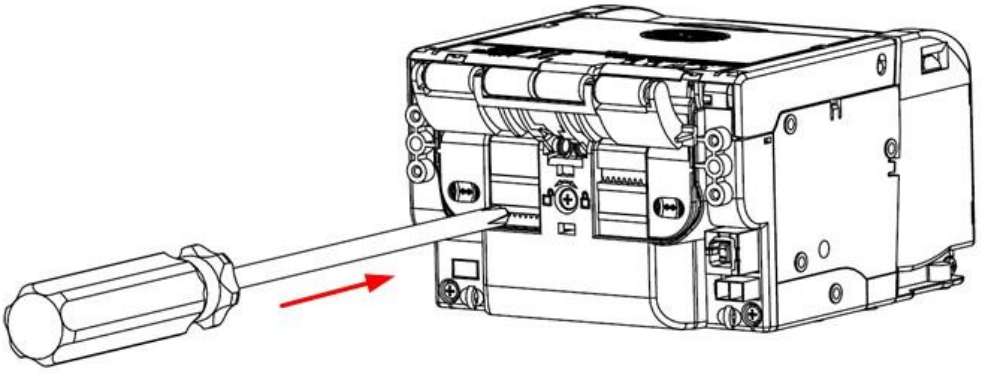


Fig. 4.2-2 Adjust the screw fixing paper guide block

4.3 Adjust the position of mark sensor

There are four mark sensors onBK-C310 printer and their positions on the left/right side or thermal/non-thermal side can be adjusted. Detail mounting positions please refer to the following figure:

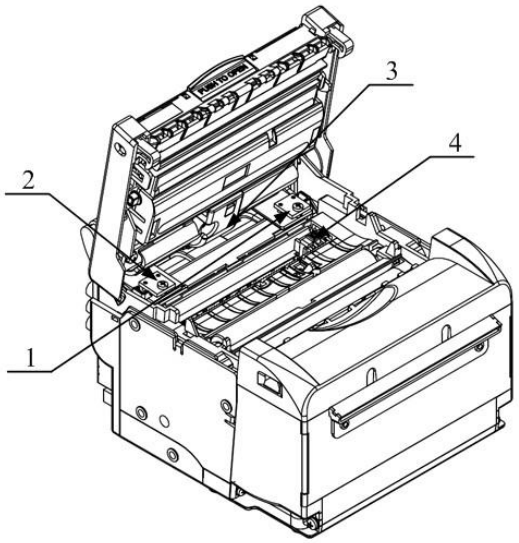


Fig. 4.3-1Mounting positions of mark sensors

No. of mark sensor	Name of mark sensor	Adjustment method
1	Right mark sensor on the thermal side	The sensors are installed on the left/right paper guide block, and the adjustment method is the same as that of paper guide block. Detail adjustment method refers to the adjustment method of paper guide block.
2	Left mark sensor on the thermal side	
3	Middle mark sensor on the thermal side	The mark sensor is fixed and its position is not adjustable.
4	Mark sensor on the non-thermal side	The mark sensor position is continuously adjustable and the adjustment method refers to the following contents of this section.

Table 4.3-1 Adjustment method of mark sensors

When the marks are on the non-thermal side of paper, the mark sensor 4 on non-thermal side will be used for detection. The position of mark sensor can be continuously adjusted in following steps:

1) Open the top cover of printer, and then remove the lower mark sensor cover as shown in the Fig. 4.3-2.

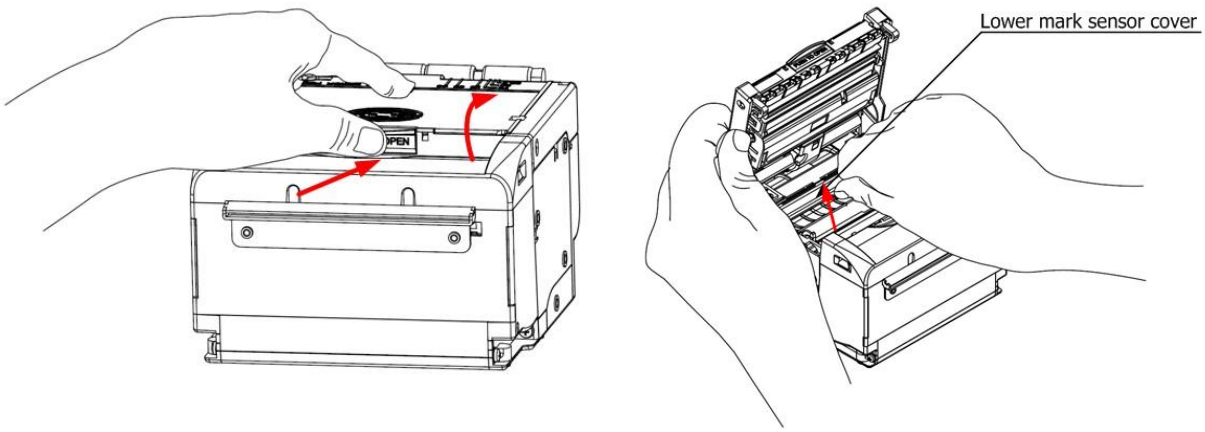


Fig. 4.3-2 Remove the lower mark sensor cover

2) Adjust the lower mark sensor position to align it with the mark on paper as shown in the Fig.4.3-3.

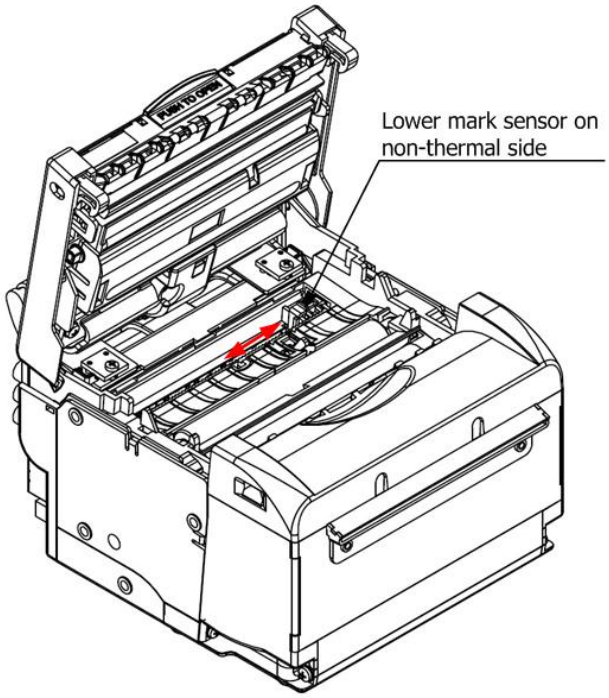


Fig. 4.3-3 Adjust the lower mark sensor position

3) Install the lower mark sensor cover and close the top cover after adjusting the lower mark sensor in place.

4.4 Connect the power adapter

1) Ensure the printer is turned off;
2) Insert the 2P power cord plug into the power interface of printer as shown in the Fig.4.4-1;
3) Connect the power adapter to an electrical outlet.

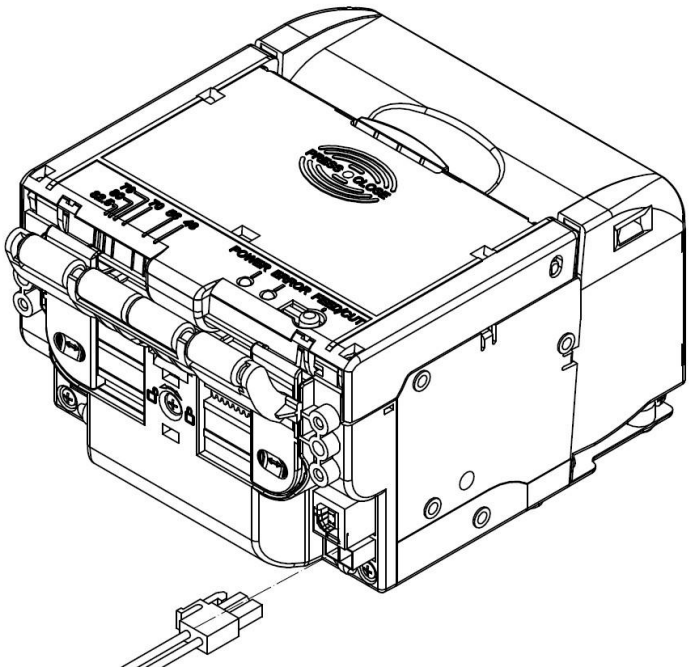


Fig. 4.4-1 Power adapter connection

Caution:

- ✧ Use the power adapter recommended by the manufacturer;
- ✧ Select appropriate power supply according to the power input parameters recommended by the manufacturer;
- ✧ Be careful to the angle of pin and socket while connecting or disconnecting the connector of power adapter.
- ✧ When connecting or disconnecting the connector of AC power adapter, always hold the connector shell and don't pull the cable forcibly.
- ✧ Avoid dragging or pulling the cable of AC adapter, otherwise the cable may be damaged or broken, and a fire and electric shocking may be caused accordingly.
- ✧ Avoid placing the power adapter near an overheating device, otherwise the surface of cable may melt and cause a fire or electric shock.
- ✧ If leaving the printer idle for a long time, please disconnect the power adapter.

4.5 Connect interface cable

BK-C310 communication interface is USB or serial interface (optional), and customer can choose the interface according to actual usage.

4.5.1 Connect USB interface cable

1) Ensure the printer is turned off;
2) Insert the USB cable into corresponding socket (only for printer configured with USB interface) as shown in the Fig. 4.5-1;
3) Connect the other end of interface cable to the host.

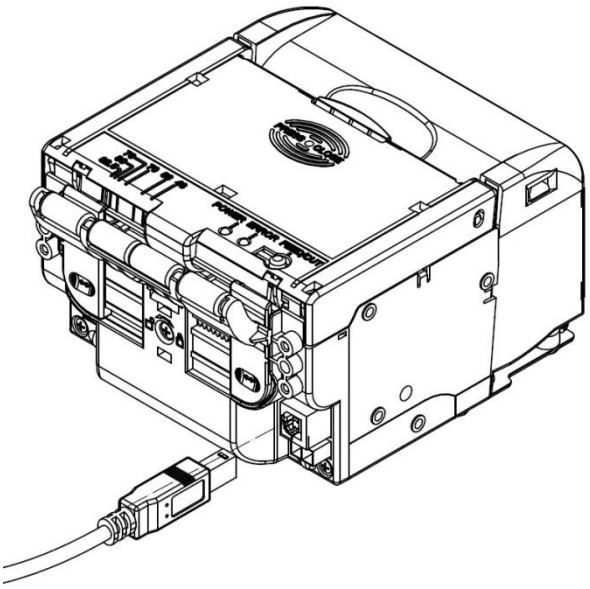


Fig. 4.5-1 Connect USB cable

Caution:

- ✧ Make sure the interface cable is connected in correct direction.
- ✧ When connecting or disconnecting the interface cable, make sure to hold the plug shell instead of dragging the cable forcibly.

4.5.2 Connect serial interface cable

1) Ensure the printer is turned off;
2) Insert one end of serial connecting cable into corresponding socket (only for printer configured with serial interface) as shown in the Fig. 4.5-2;
3) Connect the straight-through cable to the serial connecting cable as shown in the Fig.4.6-3;
4) Connect the other end of straight-through cable to the host.

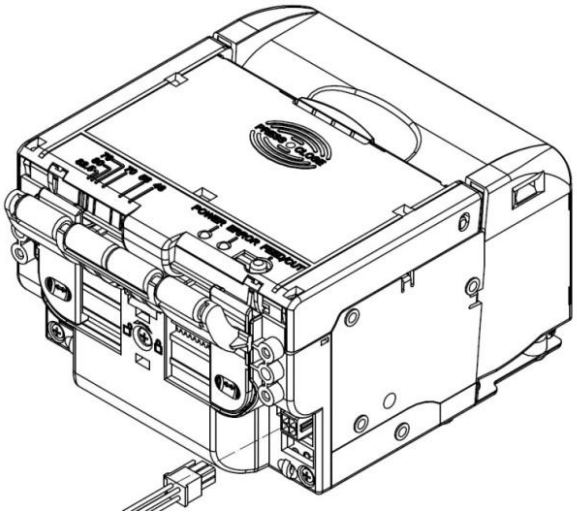


Fig. 4.5-2 Connect the serial connecting cable to the printer

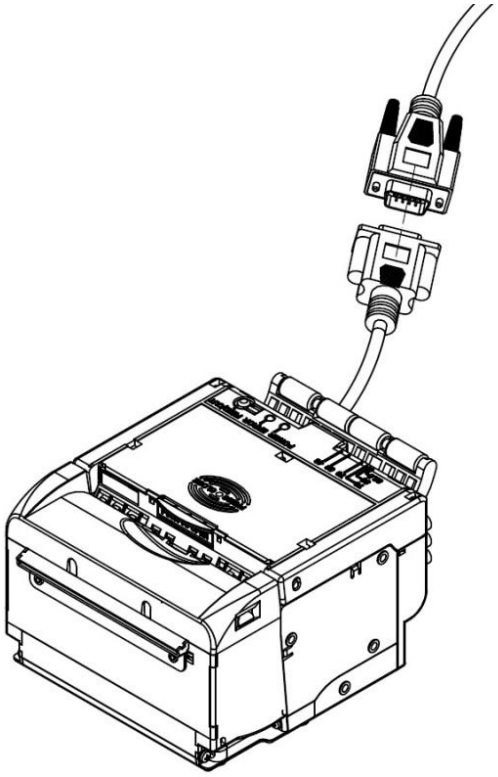


Fig. 4.5-3 Connect the straight-through cable to the serial connecting cable

Caution:

- ✧ Make sure the interface cable is connected in correct direction;
- ✧ When connecting or disconnecting the interface cable, make sure to hold the plug shell instead of dragging the cable forcibly;
- ✧ You must use the straight-through cable for cable connecting, otherwise the communication is disabled;
- ✧ Do not connect or disconnect the serial connecting cable before disconnecting the power supply.

4.5.3 Connect paper near end sensor cable

Connect the paper near end sensor cable as shown in the following figure:

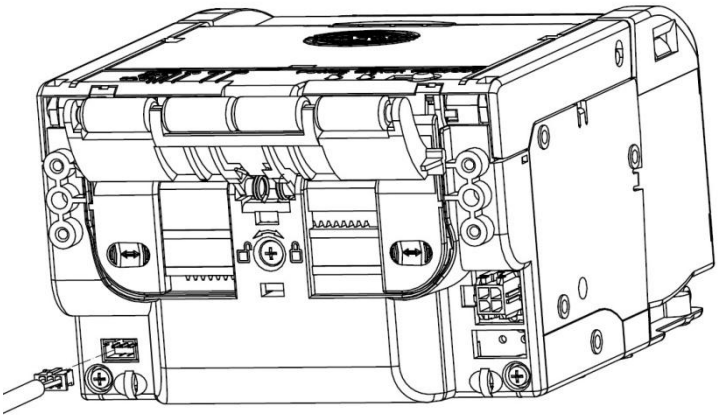


Fig. 4.5-4 Connect paper near end sensor cable

4.6 Install and load the paper roll

Before installing the paper roll, make sure the specification of paper roll is in conformity with requirements of printer (refer to 2.2 Paper specification).

4.6.1 Steps to install the paper roll

The paper roll is easy to be installed on the BK-C310 printer, and the steps are as following:

1) Turn on the power, and then place the paper head in the paper feeding path as shown in the Fig.4.6-1:

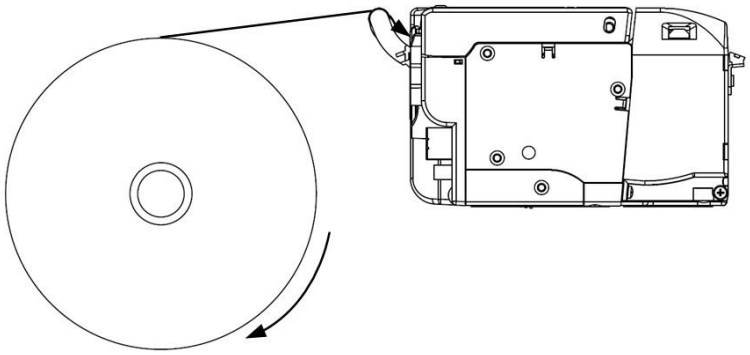


Fig. 4.6-1 Paper loading

2) When the paper sensor detects paper, the platen rollers will start rotation to complete the semi-automatic paper loading.

Caution:

✧ Before loading paper, cut the paper head trim according to the figure below:

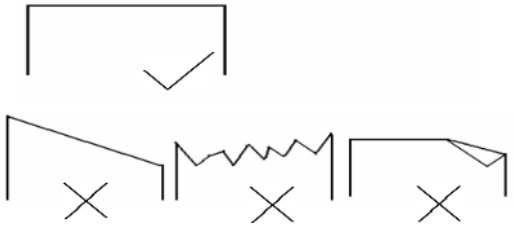


Fig. 4.6-2Paper head

✧ Before loading paper, make the paper flat to ensure the paper be fed smoothly into the path.

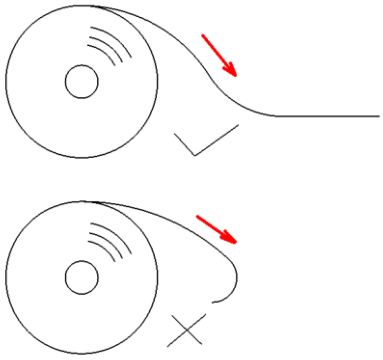


Fig. 4.6-3 Radian of paper head

4.6.2 Semi-automatic paper loading

1) Turn on the power and the ERROR LED alarms for paper end;
2) Refer to Figure 4.6-4, push paper into the paper inlet for a certain distance, and release your hands when the platen roller starts rotating and holds the paper.
3) The printer starts loading paper, and then the printer can execute print tasks after finishing loading the paper and the paper head stops at the normal print position

Caution:

✧ Push the paper into the paper feeding path with well-distributed and gentle force and try to make the paper head parallel to the paper feeding path. If the angle between paper center line and the printer center line is≤4°, it can guarantee that the paper jamming malfunction will not happen.

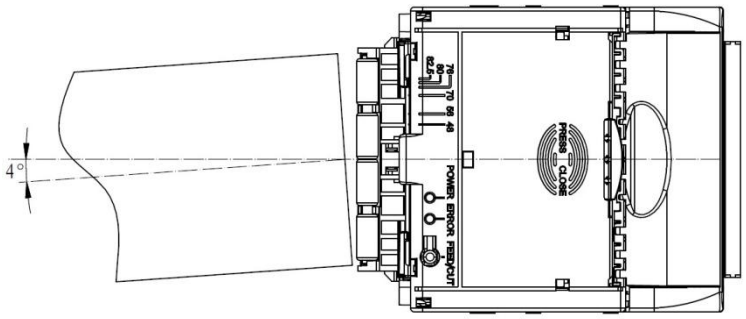


Fig. 4.6-4 Paper loading

4.7 Install the printer

The operation of BK-C310embedded printer is reliable and easy, and it has good adaptability of installation and good maintainability. It adopts modularization design and active connection, combining with embedded installation; it also adopts flexible maintenance and operation points. Please refer to the content in this section when designing the whole machine, in order to ensure the reliable and effective work of BK-C310embedded printer.

4.7.1 Notices

- ✧ Install the printer on a flat and stable place. Recommend adopting horizontal installation, and the inclination angle should not exceed ±15° (paper feeding direction). Inclination in other directions is not allowed;
- ✧ The flatness of the surface for fixing the printer should be no more than 0.3mm;
- ✧ Keep the printer far away from water source;
- ✧ Do not place the printer in the place exposed to vibration and impact;
- ✧ Ground the printer safely.

4.7.2 Printer fixing

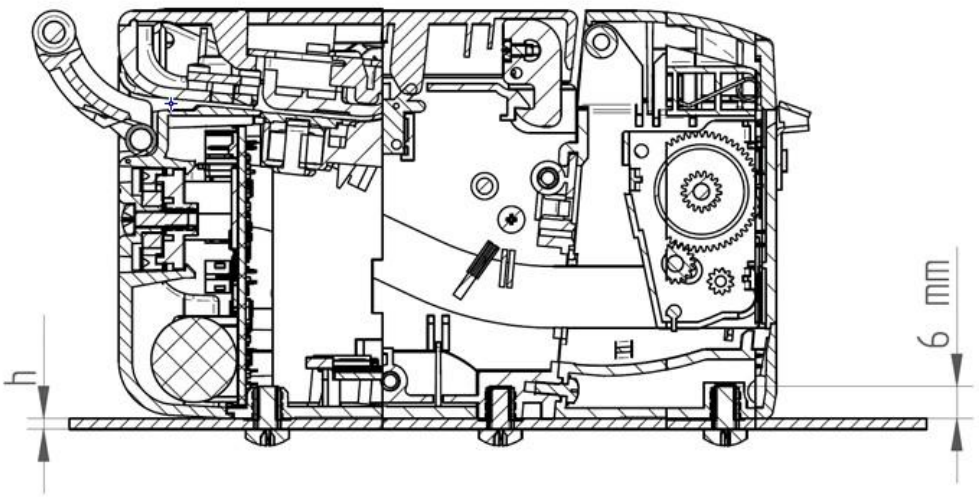


Fig. 4.7-1 Printer fixing diagram

- ➢ The positions of printer fixing holes refer to Fig. 3.2-1 or Fig. 3.2-2;
- ➢ The screw length H is ≤bottom plate thickness h + 6mm;
  For example, if the bottom plate thickness is 4mm, then the screw length is≤10mm.

4.7.3 Operation space

- Open the top cover: Press the center of button for opening/closing the top cover as shown in the figure, then the top cover can be opened.

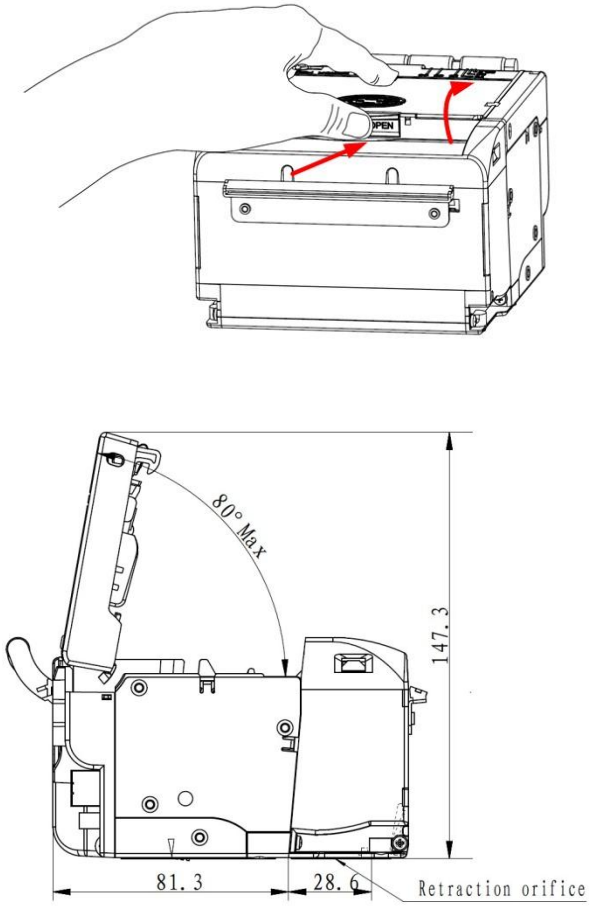


Fig. 4.7-2 Operation space for printer with standard paper holder

- Retraction orifice: Used for retracting the tickets that not been taken away the users.

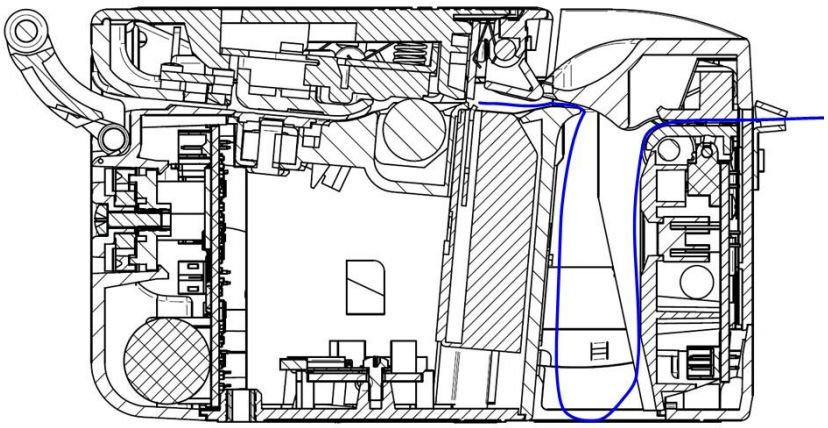


Fig. 4.7-3 Paper accommodation space inside the Presenter

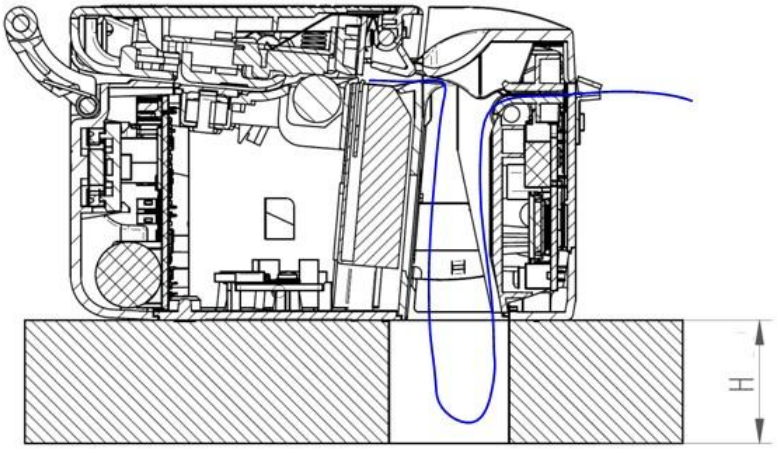


Fig. 4.7-4Presenter expanded paper accommodation space

- Presenter paper accommodation space: The Presenter paper accommodation spaceis inside the printer, it supports ticket with maximum length of 180mm; if the ticket length is longer than 180mm, then space should be reserved at the bottom of printer.
  Height of reserved space (H) ≥(Ticket length -180mm)/2。

4.8 Install Windows driver

As for the BK-C310 printer, drivers for Windows 2000/ Windows XP/ Windows server 2003/Windows Vista/Windows Server 2008/Windows 7/Windows 8/Windows 8.1/ Windows XP Embedded operating systems and the software development kit based on DLL are available, as well as the CUPS drivers for Linux system.

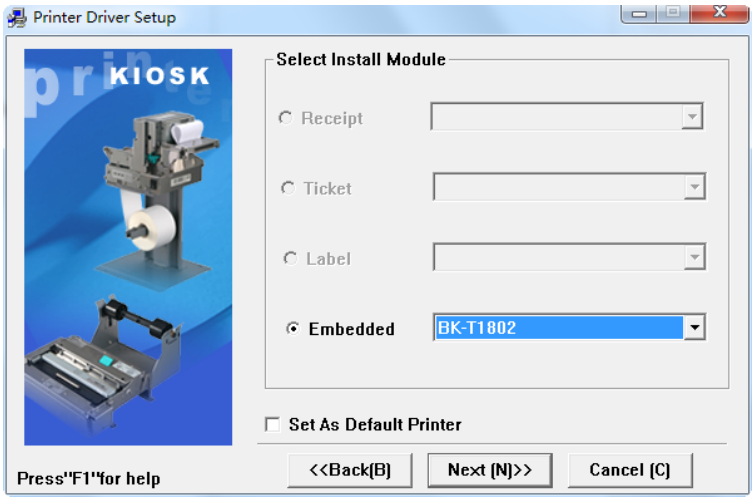
Drivers' installation steps are as following:

4.8.1 Typical installation

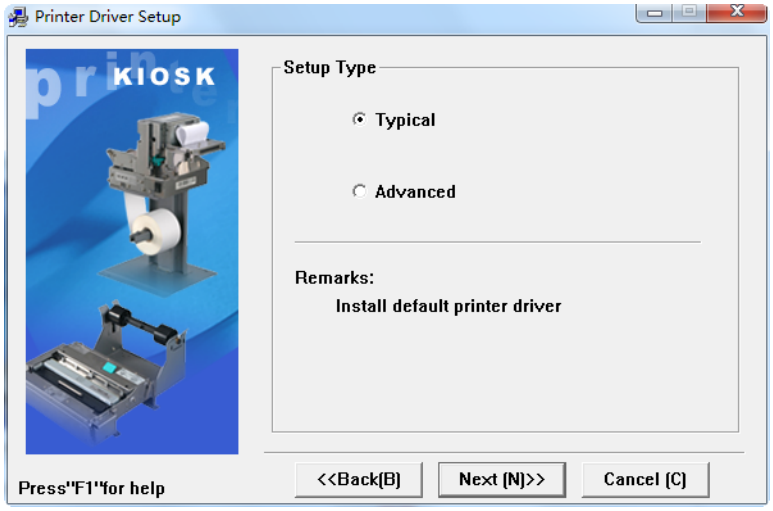
1) First run Setup.exe in the driver installation package, then read the relative software license protocols. If you accept all the clauses, click "I Accept" and the "Next" button;

Printer Driver Setup
KIOSK
Legal Agreement
CAREFULLY READ THE FOLLOWING LEGAL AGREEMENT. THE SOFTWARE PROVIDED WITH THIS AGREEMENT (THE "SOFTWARE") IS LICENSED AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS BELOW. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY DESTROY THE SOFTWARE AND DOCUMENTATION.
1. LICENSE GRANT
This software is only to be used with the equipment for which it has been made. SNBC grants to you a non-exclusive, non-transferable right to use the
I Accept
I Reject
Press"F1"for help
<<Back(B)
Next (N)>>
Cancel (C)

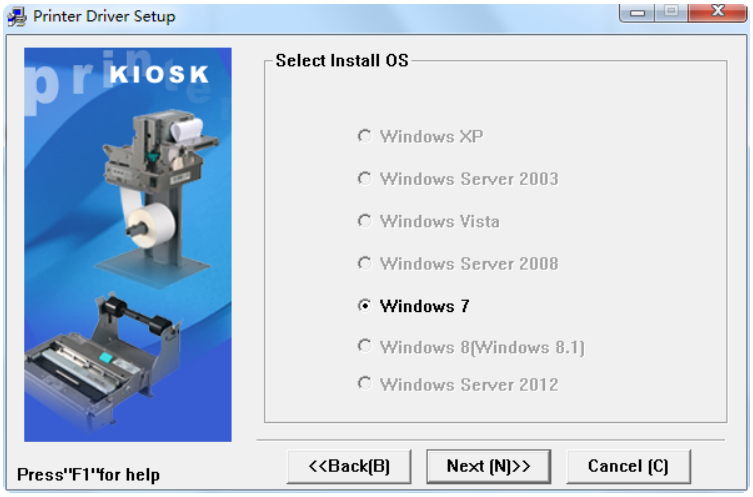
2) Choose the printer type and name to be installed. If you set this printer as a default in the system, choose the button "Set As Default Printer", and then click "Next" button;



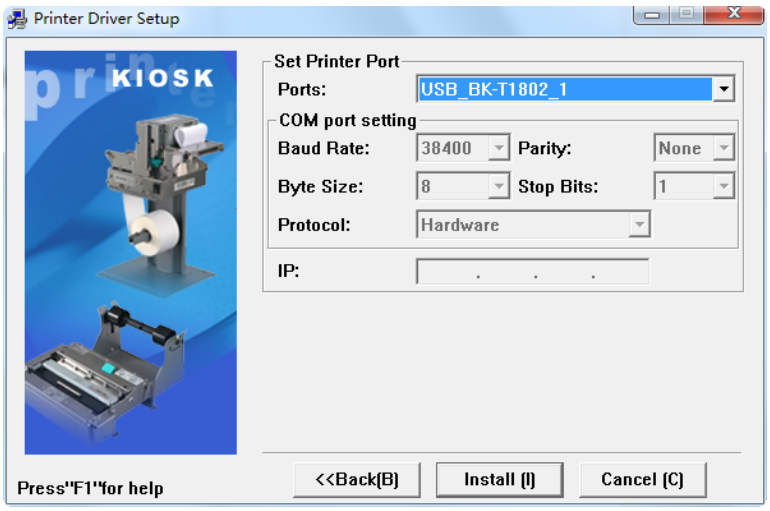
3) Select the Setup Type: "Typical" and click "Next";



4) The driver identifies the current system type, and then click "Next" button;



5) Set the printer port. Users should choose the installing port according to its use. Select "BYCOMx" as driver (X equals to 1, 2, 3, 4, 5, 6, 7 or 8), choose the USB port "USB_BK-T1802_1", and then click "Install" to end the installation.



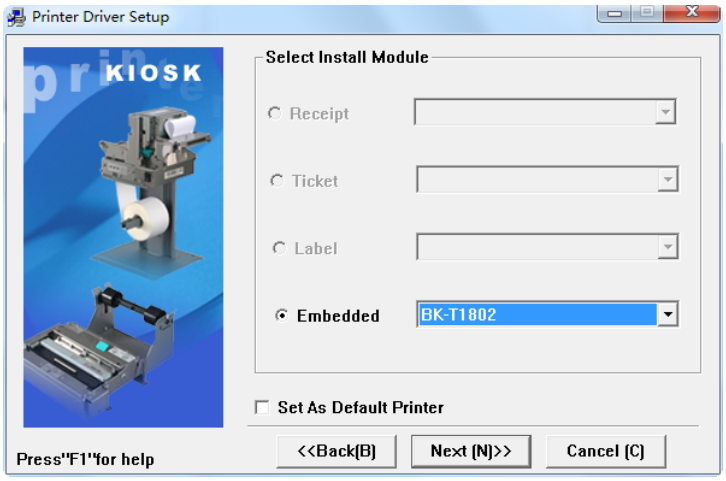
4.8.2 Advanced installation

Advanced installation is mainly used for the users who have special request to the printer driver. It adds the functions which support the installation of several USB printers driver and set the driving mode with the following steps:

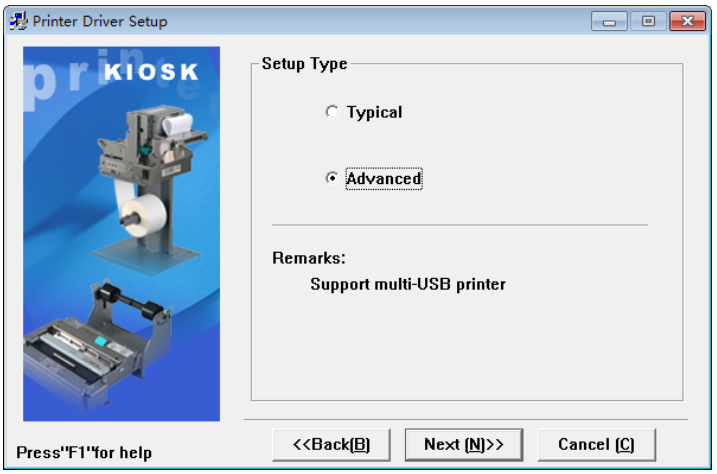
1) First run Setup.exe in the driver installation package, then read the relative software license protocols. If you accept all the clauses, click "I Accept" and the "Next" button;

Printer Driver Setup
KIOSK
Legal Agreement
CAREFULLY READ THE FOLLOWING LEGAL AGREEMENT. THE SOFTWARE PROVIDED WITH THIS AGREEMENT (THE "SOFTWARE") IS LICENSED AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS BELOW. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY DESTROY THE SOFTWARE AND DOCUMENTATION.
1. LICENSE GRANT
This software is only to be used with the equipment for which it has been made. SNBC grants to you a non-exclusive, non-transferable right to use the
I Accept
I Reject
Press"F1"for help
<<Back(B)
Next (N)>>
Cancel (C)

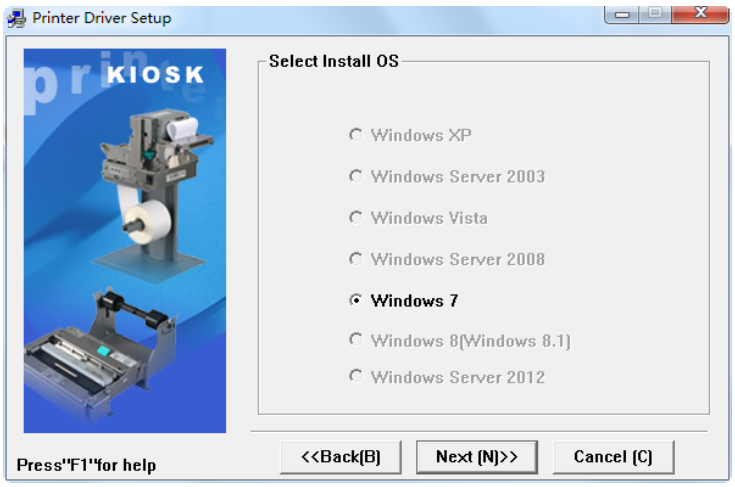
2) Choose the printer type and name to be installed (take BK-BK-T1802 as an example). If you want to set the printer as a default, choose "Set As Default Printer";



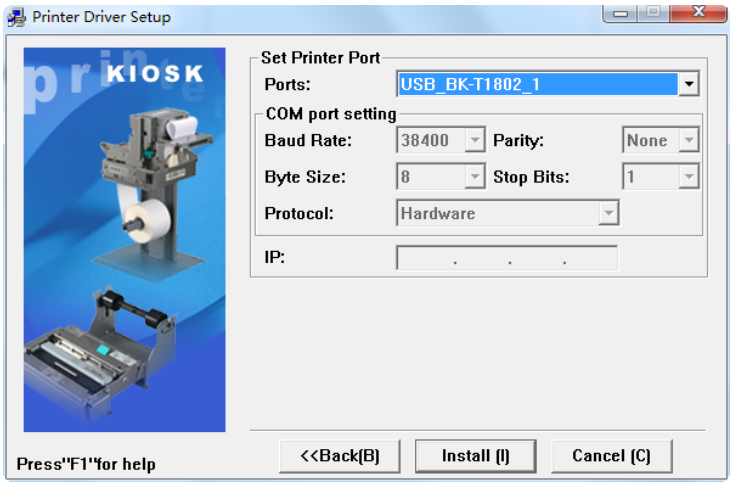
3) Choose the Setup Type: "Advanced" and click "Next";



4) The driver identifies the current system type automatically, and then click "Next";



5) Set the printer driving mode and printer port. The system supports several USB installation, then click "Install" to end the installation;



Notes:

- ✧ The installation of USB driver has been finished during the process of installing the printer driver, thus do not need to install the USB driver separately.
- ✧ Ensure the following services start before printing:

  Location: Computer Management -> Services and Applications -> Services

  a) Print Spooler

  b) Remote Procedure Call (RPC)

  c) Remote Procedure Call (RPC) Locator

5 Routine maintenance

Caution:

- ✧ Before starting routine maintenance for the printer, make sure the power is turned off.
- ✧ Do not touch the surface of print head with hands or metal. Do not use forceps so as to prevent print head, platen roller and sensors being scratched.
- ✧ Do not use organic solvents like gasoline, acetone and etc.
- ✧ When cleaning print head or sensors, please wait for pure alcohol to evaporate totally before starting printing.
- ✧ It is recommended to do routine maintenance per month.

5.1 Clean the mark sensor

Distribution of BK-C310 mark sensors is as following:

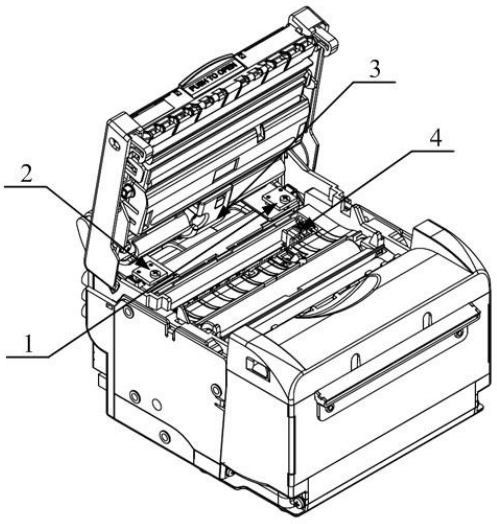


Fig. 5.1-1Mark sensor

1- Right mark sensor on the thermal side
2- Left mark sensor on the thermal side
3- Middle mark sensor on the thermal side
4- Mark sensor on the non-thermal side

Caution:

- ✧ The mark sensor on non-thermal side is the default sensor when delivery from the factory, and the middle mark sensor on thermal side is used as paper feeding sensor;
- ✧ The left and right mark sensors on thermal side are optional, customers can choose according to actual need。

When the following case occurs, the mark sensor should be cleaned:

- ➢ Cannot identify marks effectively.

5.1.1 Clean the left/right mark sensor on thermal side

Cleaning steps for the left/right mark sensor on thermal side are as following:

1) Remove the buffer module, rear cover fixing screws and rear cover module in the order and directions shown in the Fig. 5.1-2;

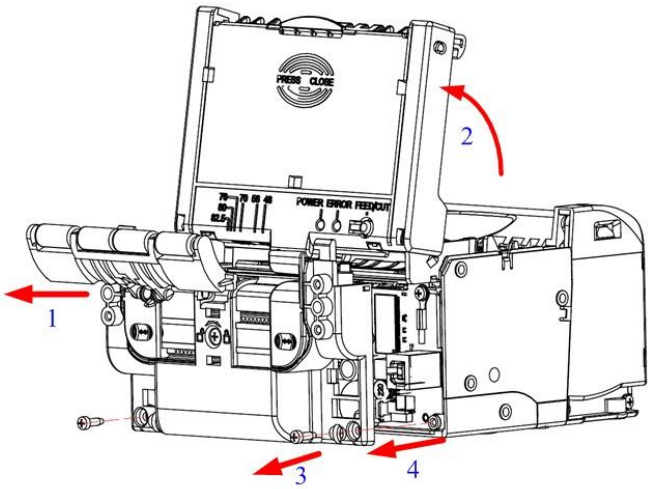


Fig. 5.1-2 Mark sensor cleaning

Caution:

✧ Disconnect the mark sensor cables from the main control board after disassembling the modules according to the above method.

2) Remove the paper guide fixing screws, transmission gear, protective plate and paper guide block in the order and directions shown in the Fig. 5.1-3;

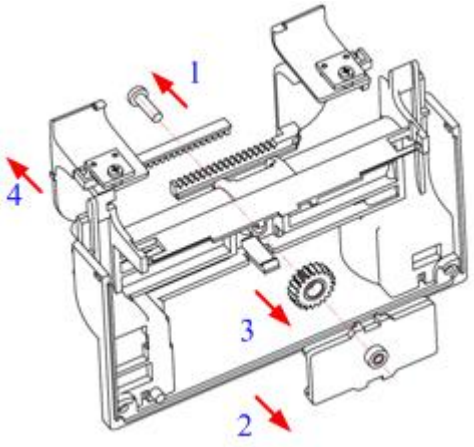


Fig. 5.1-3 Mark sensor cleaning

3) Wipe off the dust and stains on the surface of the sensors with soft alcohol cotton cloth (it should be wrung out).Wait for 5-10 minutes until the alcohol evaporates completely, and then install the parts in the reverse sequence.

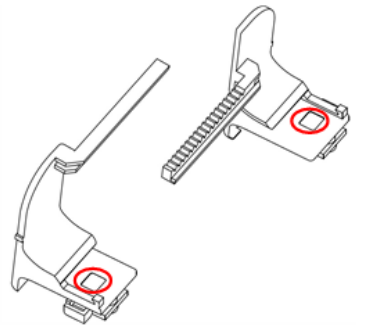


Fig. 5.1-4 Mark sensor cleaning

5.1.2 Clean the middle mark sensor on thermal side

Cleaning steps for the middle mark sensor on thermal side are as following:

1) Open the top cover as shown in the Fig. 5.1-5;

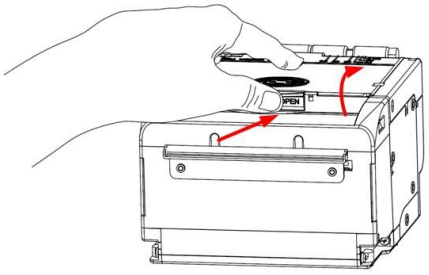


Fig. 5.1-5 Mark sensor cleaning

2) Wipe off the dust and stains on the surface of the sensor with soft alcohol cotton cloth (it should be wrung out).Wait for 5-10 minutes until the alcohol evaporates completely, and then close the top cover.

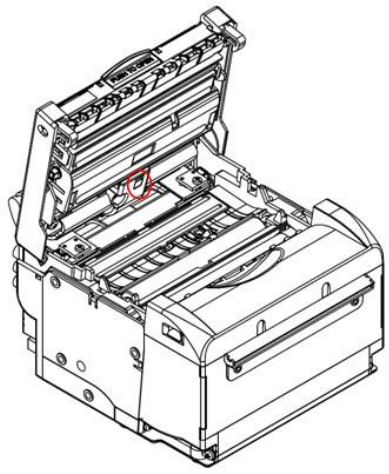


Fig. 5.1-6 Mark sensor cleaning

5.1.3 Clean the mark sensor on non-thermal side

Cleaning steps for the mark sensor on non-thermal side are as following:

1) Open the top cover as shown in the Fig. 5.1-5;
2) Remove the mark sensor cover as shown in the Fig. 5.1-7;

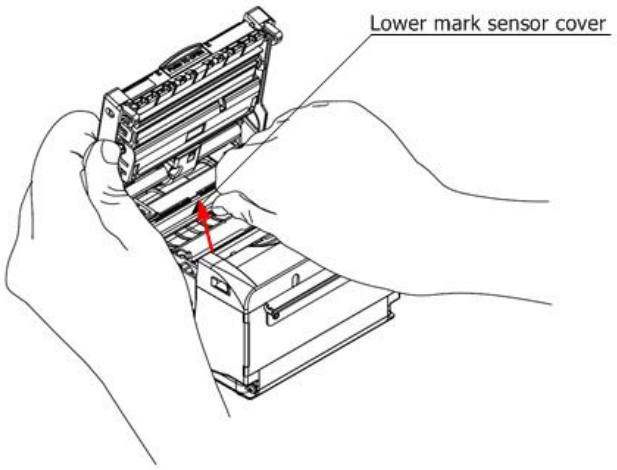


Fig. 5.1-7 Mark sensor cleaning

3) Wipe off the dust and stains on the surface of the sensor with soft alcohol cotton cloth (it should be wrung out).Wait for 5-10 minutes until the alcohol evaporates completely, and then install the mark sensor cover in reverse sequence.

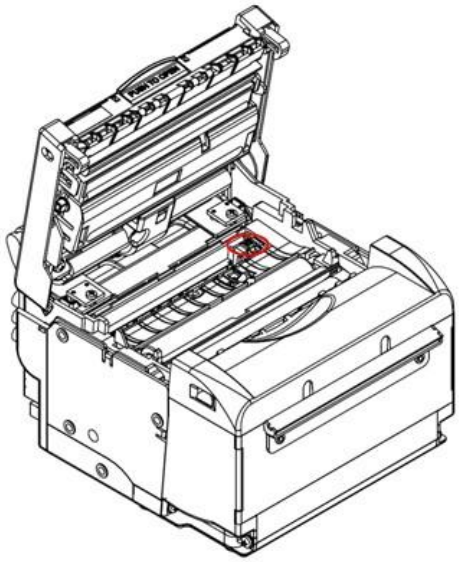


Fig. 5.1-8 Mark sensor cleaning

5.2 Clean the print head and the platen roller

- When the following cases occur, the print head and the platen roller should be cleaned:
  - Printout is not clear;
  - Some columns on the page are not clear;
  - Paper feeding or retraction with big noises.
- Cleaning steps for the print head and the platen roller are as follows:

1) Turn off the printer power.
2) Press the spanner slightly with hand as shown in Fig. 5.2-1 to open the top cover;

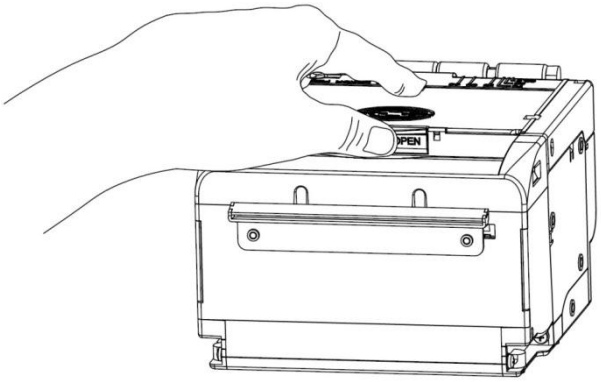


Fig. 5.2-1 Print head and platen roller cleaning

3) Refer to Fig.5.2-2, number 1 is the platen roller and number 2 is the print head. Wipe the surface with soft alcohol cotton cloth (it should be wrung out).

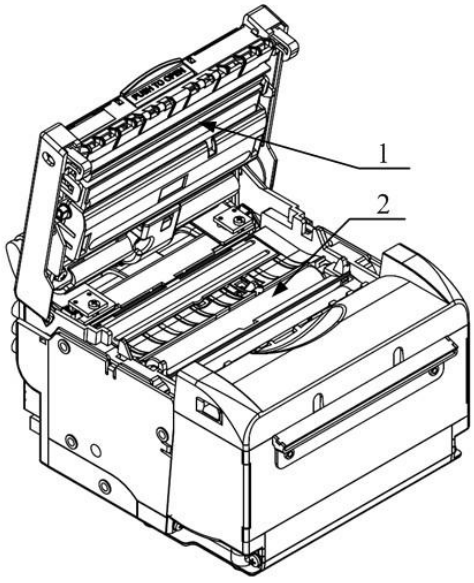


Fig. 5.2-2 Print head and platen roller cleaning

5.3 Clean the retraction sensor

- When the following case occurs, the retraction sensor should be cleaned.
  - ➢ When the Presenter fails to transmit paper retraction information properly.
- Cleaning steps for the retraction sensor are as follows:
  1) Turn off the power;
  2) Refer to Fig. 5.3-1, you can see the retraction sensor at the retraction path of Presenter. Wipe off the dust or stains on the sensor surface with alcohol cotton ball (it should be wrung out);

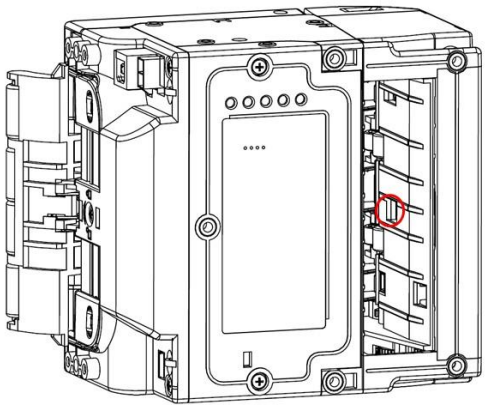


Fig. 5.3-1 Retraction sensor cleaning

  3) Wait for 5-10 minutes until the alcohol evaporates completely, and then turn on the power.

5.4 Clean the paper loading sensor

The paper loading sensor is the middle mark sensor on thermal side, and its cleaning method refers to Section 5.1.2 Clean the middle mark sensor on thermal side.

5.5 Clear the jammed paper in the cutter

- When any of the following cases occurs, please remove jammed paper manually.
  - ➢ Paper jams between platen roller and cutter holder.
  - ➢ Paper accumulates at paper inlet of the cutter in the front of print head.
  - ➢ The cutter can't cut off paper.
- Remove the jammed paper manually in the following steps:
  1) Turn off the printer power;
  2) Refer to the step 2 in Section 5.2 Clean the print head and the platen roller, press the spanner slightly with hand as shown in Fig. 5.2-1 to open the top cove;
  3) Check whether there is wastepaper under the cutter blade and print head. If so, please take it out;
  4) When confirming there is no wastepaper, close the top cover;

Caution:

✧ Turn off the power before removing the jammed paper.

5.6 Clear the jammed paper in the presenter

- When any of the following cases occurs, please remove the paper manually:
  - Paper is jammed into the path of Presenter;
  - Paper does not enter the paper output path of presenter.
- Remove the jammed paper manually in the following steps:

  1) Press the snap-fit on Pre upper path as shown in the following figure and apply force upwardly to remove the Presenter top cover;;

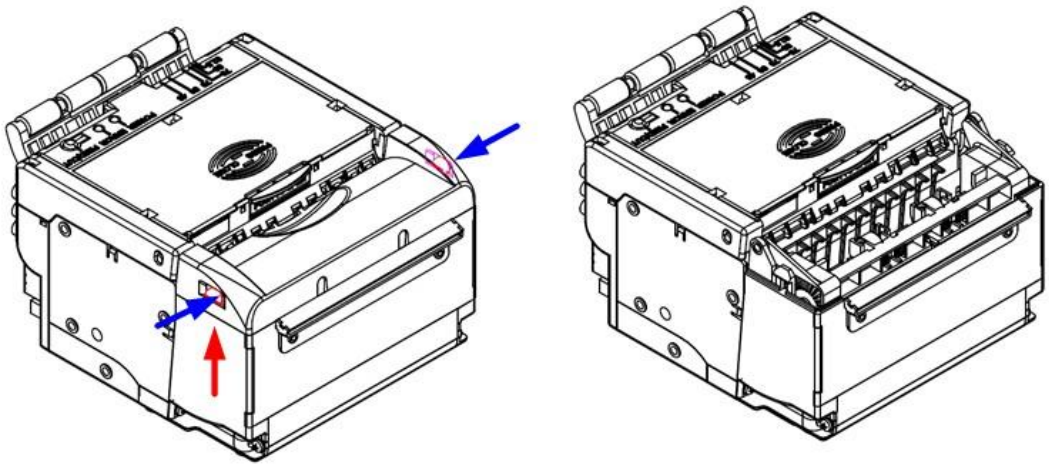


Fig. 5.6-1 Clean the jammed paper in the Presenter

  2) Take out the jammed paper and install the Pre top cover to the printer.

6 Troubleshooting and maintenance

If errors occur in the printer, consult the troubleshooting table below. If still can't settle the trouble, please contact with SNBC or the distributor.

6.1 Errors and settlement

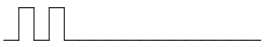
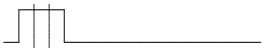
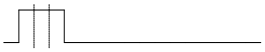
Errors	Description	Error LED
Print head overheating	Temperature of the print head is too high.	
Abnormal voltage	Input voltage is too low or too high.	
Cutter error/paper jam	Cutter can't work normally or Paper jams.	
Print head uplifting	Print head is uplifted.	
Paper end	Paper sensor detects paper end.	
Calibration failure	Marked paper calibration error.	
Paper near end	Paper sensor detects paper near end.	
Macro definition execution status	In the execution of a macro definition.	
Normal stand-by status		

Table 6.1-1 Error index

Note: In the default configuration, the printer will not stop printing when paper end, and the user could change the default configuration as stop printing when paper end via KIOSKUtility software, and under the new configuration, the error LED will flash and indicate paper end;

Printer executes the following activities when errors occur:

- Stop printing;
- Busy signal is available;
- Error LED flashes;

6.2 Solution for common errors

6.2.1 Problems during paper loading

Problem	Possible reasons	Solutions
Paper roll can't be loaded onto paper holder smoothly	The paper roll ID does not match the printer	Replace paper roll.
The printer can't feed paper automatically	Paper head is irregular; Paper jams; The paper loading sensor is not covered by paper head; Dust and wastepaper covers the paper loading sensor.	Trim the paper head according to requirements; Remove jammed paper; Check the paper head to confirm that the paper loading sensor is covered fully by paper; Clean the paper loading sensor.
After automatic paper feeding, the paper can't stop in the normal print position	Dust or wastepaper covers the paper loading sensor.	Clean the paper loading sensor.

Table 6.2-1 Errors during paper loading

6.2.2 Problems during printing

Problems	Possible reasons	Solutions
The receipt can't be ejected out smoothly.	Paper jams.	Check paper feeding path, remove wastepaper and reload paper.
Printout is not clear.	The paper is loaded in wrong direction or its quality is poor; Print head needs cleaning; The print darkness is too low; Input voltage is too low.	Load the paper roll correctly; Use recommended paper or its equivalents; Clean the print head; Adjust print darkness (*); Use the power supply which meets requirements.
Cutter works abnormally.	Paper jams in cutter; The cutter is broken.	Check if there are sundries in cutter path(*), contact with SNBC or your local distributor.
Printing data is lost and no printing.	The platen roller is not closed; Paper jams.	Close the platen roller properly; Remove jammed paper.

Table 6.2-2 Problems during printing

To adjust print darkness, contact with our distributors or SNBC.

If paper jams in cutter, please remove the jammed paper firstly, and then press CUT button to reset the cutter.

6.2.3 Problems during paper output

Problems	Possible reasons	Solutions
The printer stops printing and warns errors during printing.	Paper end; Paper jams in cutter; Dust or wastepaper covers the paper near end sensor.	Install a new paper roll; Check if there are sundries in cutter path; Clean the paper near end sensor.

Table 6.2-3 Problems during paper output

Note: Contaminated paper may cause detection failure.

6.2.4 Other problems

Problem	Possible reasons	Solutions
LED does not light and printer does not work.	The printer is not connected with the power correctly. The printer isn't turned on.	Connect the printer with power correctly. Turn on the printer.
The printer does not work after receiving commands.	Printer is in error status. The communication cable is not connected well. Interface setting is wrong.	Remove the errors(*) Make sure the communication cable is connected correctly. Set the interface again according to the self-test page.

Table6.2-4 Other problems

Note: Paper near end alarm acts only as a prompt for users, not an error status. Therefore when this alarm is given, printing task can still be sent.

Appendix

Appendix 1 Self-test page

Print self-test page in the following steps: Turn off printer power, then keep pressing the FEED button for at least 1 second while turning on the printer. The printer will start to print a self-test page. (Take 203DPI/USB interface model for an example, and the self-test page is shown as follows).

*****BK-C310 TEST FORM*****

Boot Firmware	:FV1.030.01
Main Firmware	:FV1.040.01
H/W parameters	
Flash Memory Size	:4M Bytes
Flash Logos/Fonts	:128K Bytes
Resolution	:203×203DPI
Print Width(Max)	:80mm
Fixed LeftMargin	:2mm
Fixed RightMargin	:0mm
PrintSpeed(Max)	:150mm/s
Dark Scale	:110
Cutter	:Enabled
Presenter	:Enabled
Presenter Action Mode	:Ejection Mode
Presenter Wait Time	:3s
CRComand	:Disable
Current Code Pages	:PC437
Communication Interface	
Interface Type	:USB_BK-T080III_1
Interface Mode	:API Mode
Rx Buffer Size	:4K Bytes
Resident Fonts	
Font0 (12X24)	:English
Font1 (9X17)	:English
Code Pages	
	:PC437,PC850
	:PC852,PC858

	:PC860,PC863
	:PC865,PC866
	:1252,Katakana
	:More in
	Feed button
	Configuration
	…
International Character	
	:U.S.A.
	:France
	:German
	:U.K.
	:Denmart I
	:Sweden
	:Italy
	:Spain
	:Japan
	:Norway
	:Denmark II
	:Spain II
	:Latin America
Bar Code Available	:UPC-A
	:UPC-E
	:EAN-8
	:EAN-13
	:CODE39
	:CODE93
	:ITF
	:CODABAR
	:CODE128
	:PDF417
	:GS1
	:QRCODE
	:MAXICODE
STATISTICS:	
Printed paper length	:xxxxxxxx
Printed lines(Total)	:xxxxxxxx

Printed lines(Actual)	:xxxxxxxx
Number of Cuts(Total)	:xxxxxxxx
Number of Cuts(Actual)	:xxxxxxxx
Power On time	:xxxxxxxx
Product date	:xxxxxxxx

Note: xxxxxxxx represents the detailed contents or value of printed item.

- **Explanation of self-test page:**

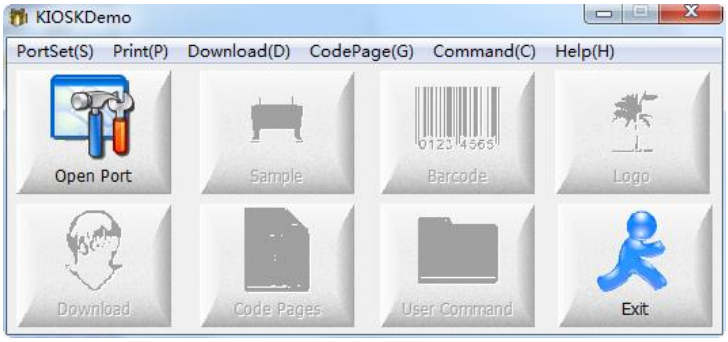
Boot Firmware----------Printer BOOTLOADER version
Main Firmware----------Printer monitor program version
H/W parameters----------Printer parameter setting
Flash Memory Size----------Printer FLASH capability
Flash Logos/Fonts----------Flash size for bitmap downloading
Resolution----------Printer resolution
Fixed Left Margin----------Printer fixed left margin
Fixed Right Margin----------Printer fixed right margin
Print Width(Max)----------Maximum printable width
Dark Scale----------Print darkness
PrintSpeed(Max)----------Print speed
Cutter----------Enable or disable cutter
Presenter----------Enable or disable Presenter
Presenter Mode----------Pre paper output mode
Presenter Wait Time---------Pre waiting time before retracting or ejecting paper
Communication Interface---Communication interface setting
Rx Buffer Size----------Data receiving buffer area size
Interface Type----------Interface type
Resident Fonts----------Font setting
BarCodeAvaliable----------Printable barcode type
STATISTICS:----------Statistic data of the printer
Printed paper length---------Total paper feeding length of printer
Printed lines(Total)----------Total printed lines of printer
Printed lines(Actual)---------Current printed lines of printer
Number of Cuts(Total)------Total cut times of printer
Number of Cuts(Actual)-----Current cut times of printer

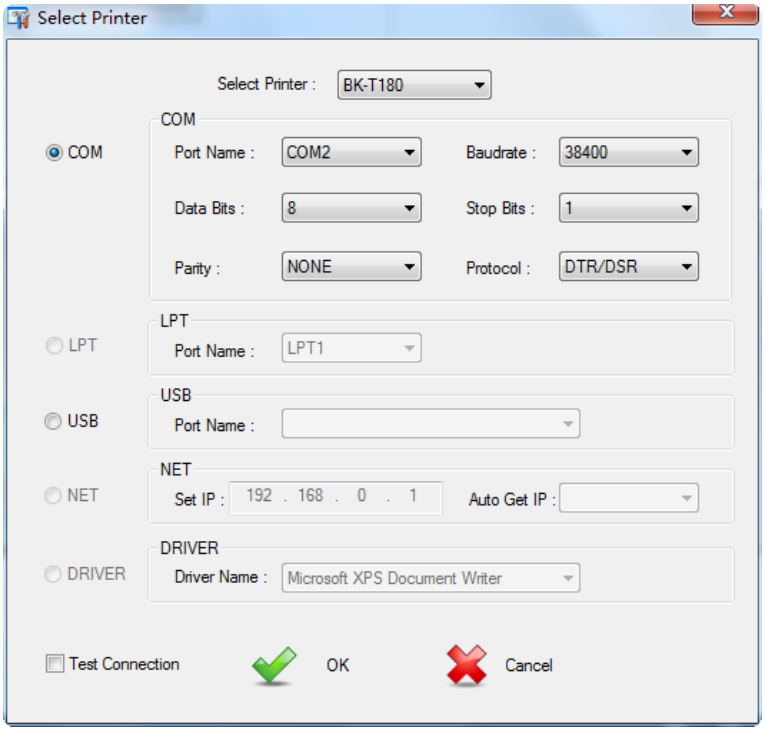
Note: The content of self-test page changes according to different printer configurations.

Appendix 2 Software program

KIOSKDemo

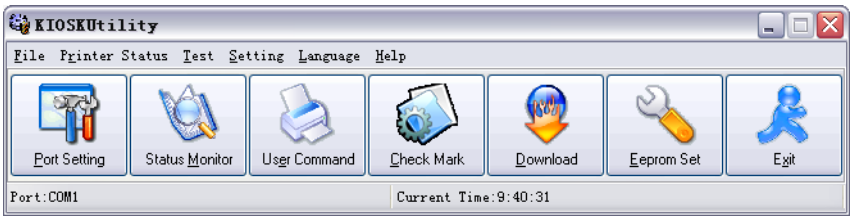
This tool is designed specifically for the embedded printer, it can be used to update the printer firmware, edit and download logos and code pages, as well as print samples, etc.





KIOSKUtility

This tool is used to set and control the printer.

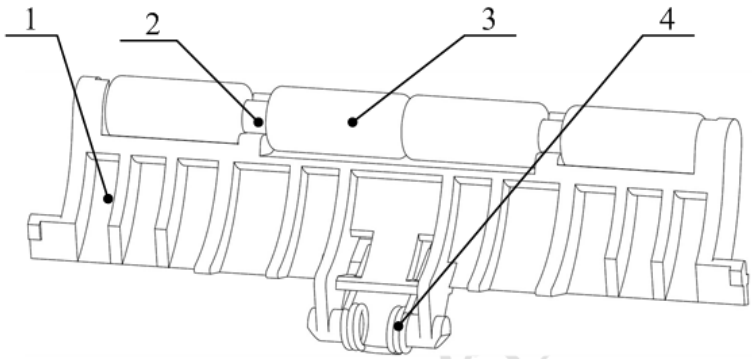


Appendix 3 Optional parts

Appendix 3.1 Buffer module

Appendix 3.1.1 Buffer module

Buffer module introduced in this section is the buffer module installed on the BK-C310 print mechanism, it is an optional part, if the customers choose this module, then it will be installed directly on the print mechanism before delivering from the factory. Otherwise, the part is not installed. The buffer module consists of following parts:



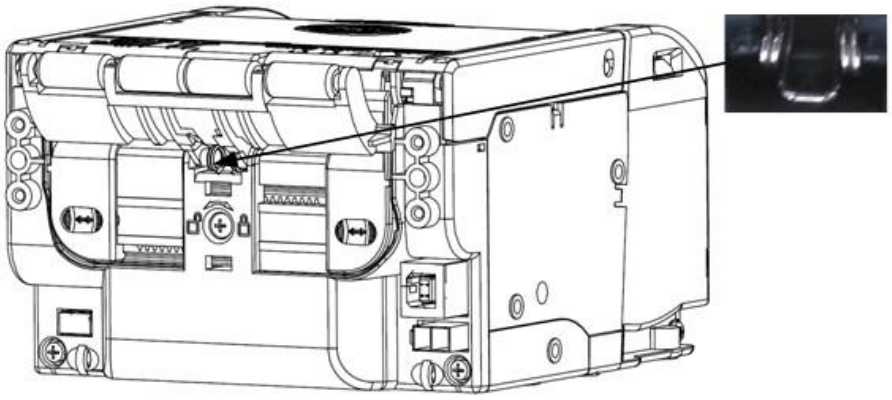
Appendix Fig.3.1.1-1 Structure of buffer module

1 —Buffer plate 2 —Platen roller shaft 3 —Platen roller 4 —Torsion spring

Note: The torsion spring should be at the correct position shown in the figure.

Appendix 3.1.2 Buffer module installation

Buffer module installation effect figure is as following:



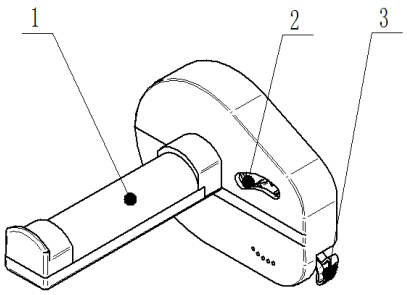
Appendix Fig.3.1.2-1 Buffer module installation

Note: Overall size of buffer module refer to Fig. 3.2-1.

Appendix 3.2 Components of paper roll shaft module

Appendix 3.2.1 Structure of paper roll shaft module

Currently, the configured BK-C310 paper roll shaft is as following, and it can adapt to the paper roll with the minimum ID 25mm.

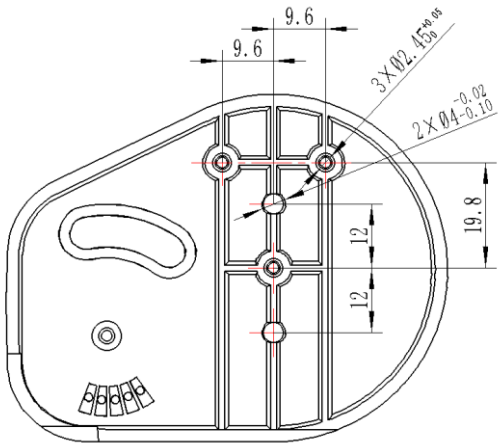


Appendix Fig. 3.2.1-1 Components of paper roll shaft

1—Paper roll shaft 2 —Paper near end sensor 4 —Paper near end adjustment spanner

Appendix 3.2.2 Paper roll shaft installation

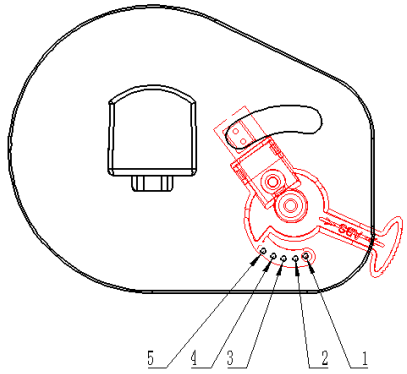
The paper roll shaft module and the print mechanism are packed separately, which need the customer itself to assemble. There are three st2.9 screws are provided in the package for fixing.



After installing the paper roll shaft, connect the plug of paper near end sensor to the socket on the print mechanism.

Appendix 3.2.3 Adjust the paper near end sensor

Turn the green spanner to adjust the position of paper near end sensor as shown in the following figure. The paper near end sensor has 5 positions and position 1 is the default position when delivers from the factory.



Appendix Fig. 3.2.3-1 Paper near end sensor adjustment

The paper near end sensor has 5 positions, and the corresponding paper roll diameters are as following:

Position 1: detect φ39mm diameter paper roll;

Position 2: detect φ47mm diameter paper roll;

Position 3: detect φ55mm diameter paper roll;

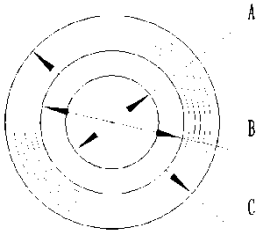
Position 4: detect φ63mm diameter paper roll;

Position 5: detect φ71mm diameter paper roll;

The minimum remaining paper amount (theory value) can be detected by the paper near end sensor is as following:

Paper thickness (μm)	Position 1	Position 2	Position 3	Position 4	Position 5
45	9.6m	21.6m	35.9m	52.4m	71.1m
65	6.7 m	15m	24m	36m	49.1m
80	5.4m	12.2m	20.2m	29.5m	40m
100	4.3m	9.8m	16.2m	23.6m	32m

Appendix Table 3.2.3-1 Judgment value table of remaining paper amount



Appendix Fig. 3.2.3-2 Paper roll

A: Paper roll core ID

B: Paper roll core OD

C: Paper roll diameter

Notes:

✧ The above value are calculated according to 25mm inner diameter and 31mm outer diameter of paper roll core;

✧ The above minimum remaining paper amount in the table is theory value, which will have a difference in the actual usage.

Appendix 4 Safety parts list

No.	Part name	Model or key characters	Qty.	Manufacturer
1	Main control board	KSKACV1.2/FR-4/6 layer	1	SHANDONG NEW BEIYANG INFORMATION TECHNOLOGY CO., LTD.
2	Motor for paper feeding during printing	35P048L0-00403/4.3Ω±10%	1	SHANGHAI MOONS' ELECTRIC CO., LTD.
3	Presenter motor	FK-130SH-09450/ rated current 240mA	2	MABUCHI MOTOR CO., LTD.
4	Cutter motor	FK-130SH-09450/ rated current 240mA	1	MABUCHI MOTOR CO., LTD.